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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/003,116	12/06/2001	Mark Tuttle	M4065.0363/P363-A	5771
24998	7590	10/08/2004	EXAMINER	
DICKSTEIN SHAPIRO MORIN & OSHINSKY LLP			BEREZNY, NEMA O	
2101 L STREET NW			ART UNIT	
WASHINGTON, DC 20037-1526			PAPER NUMBER	
			2813	

DATE MAILED: 10/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/003,116

Applicant(s)

TUTTLE, MARK

Examiner

Nema O Berezny

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 31 August 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 87-115 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 87-96,98,100 and 102-115 is/are rejected.
- 7) ☒ Claim(s) 97,99 and 101 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 8-31-04 has been entered. Claims 87-115 are currently pending.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 87-88, 100, 103, 108-109, and 112-115 are rejected under 35 U.S.C. 103(a) as being unpatentable over Juskey et al. (5,371,404) in view of Fukuoka (5,949,654). Juskey discloses a method of forming a structure for supporting an integrated circuit chip, which chip may be affected by external magnetic fields, said method comprising: forming a substrate (Fig.2 el.10); providing a support surface for an integrated circuit chip, said substrate, and support surface forming part of a chip carrier (Fig.2); and supporting an integrated circuit chip (el.16) with said chip carrier, said chip

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carrier having a top and bottom surface, wherein a layer of magnetic field shielding material (el.20) is formed on said integrated circuit chip. However, Juskey does not disclose forming an insulating layer over said substrate. Juskey would look to one such as Fukuoka for positional accuracy because Fukuoka discloses forming an insulating layer over said substrate (Fig.3 el.151; col.16 lines 25-28, 40-42). Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to use the insulating layer of Fukuoka with the method of Juskey in order to correct the unevenness of the positional accuracy of conductor patterns (col.16 lines 29-33) **[claim 87]**.

Based upon claim 87 above, Juskey also discloses providing a second layer of magnetic field shielding material (el.20) on top of said chip carrier **[claim 88]**.

Based upon claim 87 above, Juskey also discloses electrically coupling (Fig.2 el.22) a chip with said flip-chip carrier, said chip having a top and bottom surface, wherein said chip further comprises a layer of magnetic field shielding material (el.20) formed on said top surface. However, Juskey does not disclose forming an elastomeric layer over said insulating layer. Juskey would look to one such as Fukuoka for positional accuracy because Fukuoka discloses forming an insulating layer over said substrate, and forming an elastomeric layer over said insulating layer (Fig.3 el.151; col.16 lines 25-28, 40-42), said substrate, insulating layer, and elastomeric layer forming part of a flip-chip carrier (Fig.3). Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to use the elastomeric layer of

Fukuoka with the method of Juskey in order to correct the unevenness of the positional accuracy of conductor patterns (col.16 lines 29-33) **[claim 100]**.

Based upon claim 100 above, Juskey also discloses further comprising a printed circuit board electrically coupled to said substrate, said printed circuit board having a top and bottom surface (col.3 lines 34-37) **[claim 103]**; wherein said substrate comprises a flexible tape (col.3 lines 11-16) **[claim 108]**; and wherein said substrate is a polyimide tape (col.3 lines 11-16) **[claim 109]**.

Based upon claims 87 and 100 above, Juskey does not disclose forming conductive traces within the insulating layer or between said insulating layer and said elastomeric layer. Juskey would look to one such as Fukuoka for electrical wiring connections because Fukuoka discloses forming conductive traces within said insulating layer (Fig.3 – vertical traces) **[claims 112, 114]**; forming conductive traces between said insulating layer and said elastomeric layer (Fig.3 – horizontal traces) **[claim 113]**; and forming conductive traces between said insulating layer and said support surface (Fig.3 – horizontal traces) **[claim 115]**. Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to use the conductive traces of Fukuoka with the method of Juskey in order to provide an electrical wiring connection (col.16 lines 25-28).

Claims 89-90, 102, and 107 are rejected under 35 U.S.C. 103(a) as being unpatentable over Juskey in view of Fukuoka as applied to claims 87, 100, and 103 above, and further in view of Fritz (3,743,978). Juskey and Fukuoka do not disclose a

second layer of magnetic field shielding material embedded within the substrate of a chip carrier or a printed circuit board, or a second layer of magnetic field shielding material provided between said substrate and said insulating layer.

Juskey and Fukuoka would look to one such as Fritz for suppressing radio frequency noise because Fritz discloses providing a second layer of magnetic field shielding material (Fig.8 el.34) embedded within the substrate of a chip carrier or printed circuit board. Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to use the shielding material of Fritz with the method of Juskey in view of Fukuoka in order to suppress stray radio frequency noise as a low pass RF filter (col.1 lines 10-14) [**claims 89, 90, 107**].

Juskey and Fukuoka would look to one such as Fritz for suppressing radio frequency noise because Fritz discloses further comprising a second layer of magnetic field shielding material (Fig.8 el.33) provided between a substrate and an insulating layer (el.35). Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to use the shielding material of Fritz with the method of Juskey in view of Fukuoka in order to suppress stray radio frequency noise as a low pass RF filter (col.1 lines 10-14) [**claim 102**].

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Claims 91-96 are rejected under 35 U.S.C. 103(a) as being unpatentable over Juskey in view of Fukuoka as applied to claim 87 above, and further in view of Tracy et al. (5,902,690). Juskey and Fukuoka do not disclose a magnetic memory device or a

magnetic field shielding material comprising a magnetic material selected from the group consisting of ferrites, manganites, chromites and cobaltites.

Juskey and Fukuoka would look to one such as Tracy for a shielded device because Tracy discloses a magnetic memory device comprising a magnetic random access memory device (title). Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to use the MRAM device of Tracy with the method of Juskey and Fukuoka in order to utilize a device which is shielded from stray magnetic fields (Tracy - Abstract) [**claims 91, 92**].

Juskey and Fukuoka would look to one such as Tracy for a magnetic field shielding material that is non-conductive and having high permeability because Tracy discloses wherein said layer of magnetic field shielding material comprises a magnetic material selected from the group consisting of ferrites, manganites, chromites and cobaltites (col.4 line 65 – col.5 line 10) [**claim 93**]; and wherein said magnetic material comprises  $\text{MFe}_2\text{O}_4$ , wherein M is at least one atom selected from the group consisting of Mn, Fe, Co, Ni, Cu, and Mg (col.5 lines 2-8) [**claim 94**]. Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to use the ferrite material of Tracy with the method of Juskey and Fukuoka in order to provide a shielding material that is non-conductive and highly permeable (Tracy - col.4 line 65 – col.5 line 2).

Juskey and Fukuoka would look to one such as Tracy for reduced costs because Tracy discloses wherein said magnetic material comprises a material which includes conductive particles (col.5 lines 2-4, 15-30) [**claim 95**]; and wherein said conductive

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particles are selected from the group consisting of nickel particles, iron particles, and cobalt particles (col.5 lines 2-4, 15-30) **[claim 96]**. Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to use the conductive particles of Tracy with the method of Juskey and Fukuoka in order to offer several application methods of said magnetic material at a low cost (Tracy – col.5 lines 23-31).

Claims 98 and 104-106 are rejected under 35 U.S.C. 103(a) as being unpatentable over Juskey and Fukuoka as applied to claims 87, 100, and 103 above, and further in view of Nakagawa et al. (4,801,489). Juskey and Fukuoka do not disclose magnetic field shielding material on the bottom surface of a chip carrier or on the top or bottom surface of a printed circuit board. However, Juskey and Fukuoka would look to one such as Nakagawa for electromagnetic shielding because Nakagawa discloses providing a second layer of magnetic field shielding material (Fig.10 el.22') on the bottom surface of said chip carrier **[claim 98]**; and further comprising a second and third layer of magnetic field shielding material (Fig.10 el.22') provided on said top and bottom surface of said printed circuit board **[claims 104-106]**. Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to use the shielding layers of Nakagawa with the method of Juskey and Fukuoka in order to provide an electromagnetic shield (Nakagawa - Abstract).



Claims 110-111 are rejected under 35 U.S.C. 103(a) as being unpatentable over Juskey in view of Fukuoka as applied to claim 100 above, and further in view of Higgins, III (5,639,989). Juskey and Fukuoka do not disclose an elastomeric layer comprising silicone. However, Juskey and Fukuoka would look to one such as Higgins for a low modulus of elasticity material because Higgins discloses wherein said elastomeric layer comprises silicone or a silicone-modified epoxy (col.6 lines 29-32). Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to use the silicone or silicone-modified epoxy elastomeric layer of Higgins with the method of Juskey and Fukuoka in order to provide an elastomeric layer with a low modulus of elasticity (col.6 lines 29-32).

***Allowable Subject Matter***

The following is a statement of reasons for the indication of allowable subject matter for claims 97, 99, and 101: the prior art of record does not teach or disclose or make obvious a method comprising inter alia, a second layer of magnetic field shielding material formed on a bottom surface of a chip electrically connected to a chip carrier. The prior art of record discloses magnetic field shielding layers on the top surface of a chip, and on the top or bottom surface of a chip carrier or printed circuit board, and embedded within a substrate or board. However, the prior art is silent concerning a shielding layer on the bottom surface of a chip.

Claims 97, 99, and 101 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### ***Response to Arguments***

Applicant's arguments with respect to claims 87-99 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

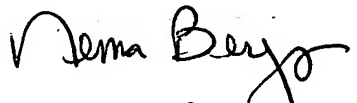
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nema O Berezny whose telephone number is (571) 272-1686. The examiner can normally be reached on M-F 9-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead, Jr. can be reached on (571) 272-1702. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

NB

  
Nema Berezhny

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